PCE Platform

CONAE
COMISION NACIONAL DE
ACTIVIDADES ESPACIALES

PCE DESCRIPTION

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PCE Platform Capabilities

The PCE (CONAE Standard Platform) is based on the SAC-C platform.

SAC-C was launched in November 2000.

It is operating from November 2000 flawlessly.

PCE Platform Capabilities

Two versions of PCE are presented.

PCE-1 is lighter and can be adapted to different node crossing time.

PCE-2 has more capabilities in terms of attitude control performance and can accommodate payloads heavier and more demanding in power.

PCE-2 is tailored for SSO with 6:00am/pm node crossing time.

PCE Platform Capabilities

PCE-1 Platform Characteristics

Life time	***>4 years***
Orbit	**Height : 650 to *800 Km.*** **Type : *Circular Sun-Synchronous, 9:30 am to 2:30 pm***

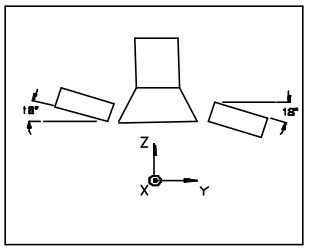
PCE Platform Capabilities

PCE-1 Platform Characteristics

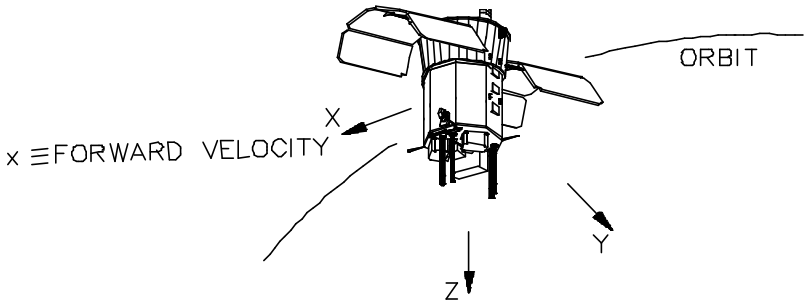
Radiation Tolerant	***20 kRad***
Redundancy	**All subsystems fully redundant**

PCE Platform Capabilities

PCE-1 Platform Characteristics



SOLAR PANELS DEPLOYMENT
ANGLE DETAIL



PCE Platform Capabilities

PCE-1 Platform Characteristics

Spacecraft Telemetry	***S Band***
Science	⌘*S Band: 5Mbps* ⌘*X Band: 320Mbps*
On Board Data Storage	⌘*96Mbytes (bus housekeeping and instruments with low data storage requirements)* ⌘*Data storage for instruments with higher requirements could be provided (up to 128Gbits)*

PCE Platform Capabilities

PCE-1 Platform Characteristics

Spacecraft Attitude Control
(on board)

Accuracy (mission mode)
0,2 deg

Knowledge (mission mode)
10 acrsec (satellite axis)

Stability
0,004 deg/sec (3 sigma)

Navigation
(on board)

C/A Code GPS
30 meters (1 sigma)

PCE Platform Capabilities

PCE-1 Platform Characteristics

Spacecraft Attitude Control

Sensors:

horizon sensors, tri-axial magnetometers, star trackers, GPS, coarse sun sensors.

Actuators:

2 momentum wheels, 3 torque rods, 8 thrusters.

PCE Platform Capabilities

PCE-1 Platform Characteristics

Spacecraft Power

Bus Voltage
21 - 35 Volts

Solar Array Generated Power
560 to 600 *Watts EOL* *(AsGs)*

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2 Nickel Hydrogen Batteries
12 Ah (25% max DoD)

Bus Power Consumption
130 Watts (average)

Max Payload Power
140 Watts (average)

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PCE Platform Capabilities

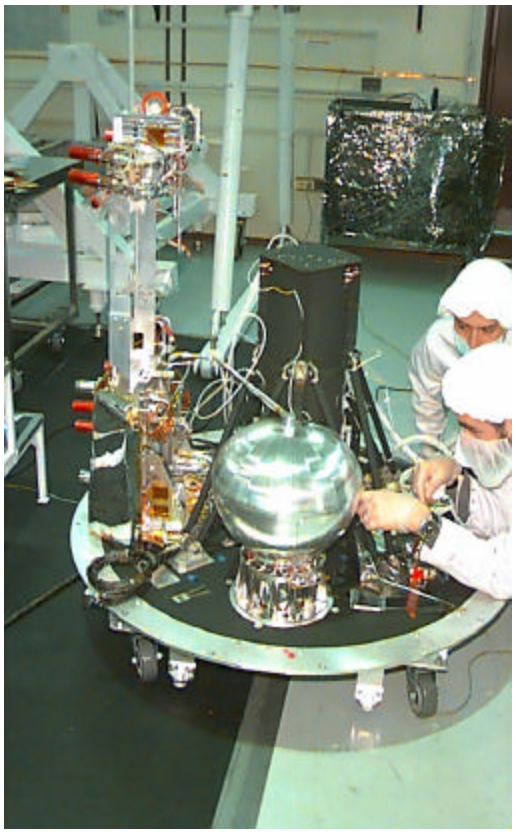
PCE-1 Platform Characteristics

Mass Budget

Bus mass: 360 - 380 kg.
Payload mass: Up to 200kg.

PCE Platform Capabilities

Spacecraft Propulsion System



12 kg of hydrazine
8 thrusters in dual configuration

Attitude Control during maneuvers is performed by off modulation.

PCE Platform Capabilities

PCE-2 Platform Characteristics

Life time	***>5 years***
Orbit	**Height : 650 to *800 Km.*** **Type : *Circular Sun-Synchronous, 06:00am/pm***

PCE Platform Capabilities

PCE-2 Platform Characteristics

Radiation Tolerant	***20 kRad***
Redundancy	**All subsystems fully redundant**

PCE Platform Capabilities

PCE-2 Platform Characteristics

Spacecraft Telemetry	***S Band***
Science	⌘*S Band: 5Mbps* ⌘*X Band: 320Mbps*
On Board Data Storage	⌘*96Mbytes (bus housekeeping and instruments with low data storage requirements)* ⌘*Data storage for instruments with higher requirements could be provided (up to 128Gbits)*

PCE Platform Capabilities

PCE-2 Platform Characteristics

Spacecraft Attitude Control
(on board)

Accuracy (mission mode)
0,04deg

Knowledge (mission mode)
7 acrsec (satellite axis)

Stability
0,0005 deg/sec (3 sigma)

Navigation
(on board)

C/A Code GPS
30 meters (1 sigma)

PCE Platform Capabilities

PCE-2 Platform Characteristics

Spacecraft Attitude Control

Sensors:

tri-axial magnetometers, star trackers, GPS, coarse sun sensors.

Actuators:

4 reaction wheels, 3 torque rods, 16 thrusters.

An Inertial Reference Unit can be also considered in the Attitude Control Subsystem baseline configuration if necessary. The performances included in this presentation does not take into account an IRU in the simulations.

PCE Platform Capabilities

PCE-2 Platform Characteristics

Spacecraft Power

Bus Voltage
64 - 78 Volts

Solar Array Generated Power
1700 Watts EOL (AsGs)

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1 Nickel Hydrogen Batteries
132 Ah (20% max DoD)

Bus Power Consumption
300 Watts (average)

Max Payload Power
1000 / 3500 Watts (average/peak)

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PCE Platform Capabilities

PCE-2 Platform Characteristics

Mass Budget

Bus mass: 680 to 790 kg.
Payload mass: Up to 600kg.

PCE Platform Capabilities

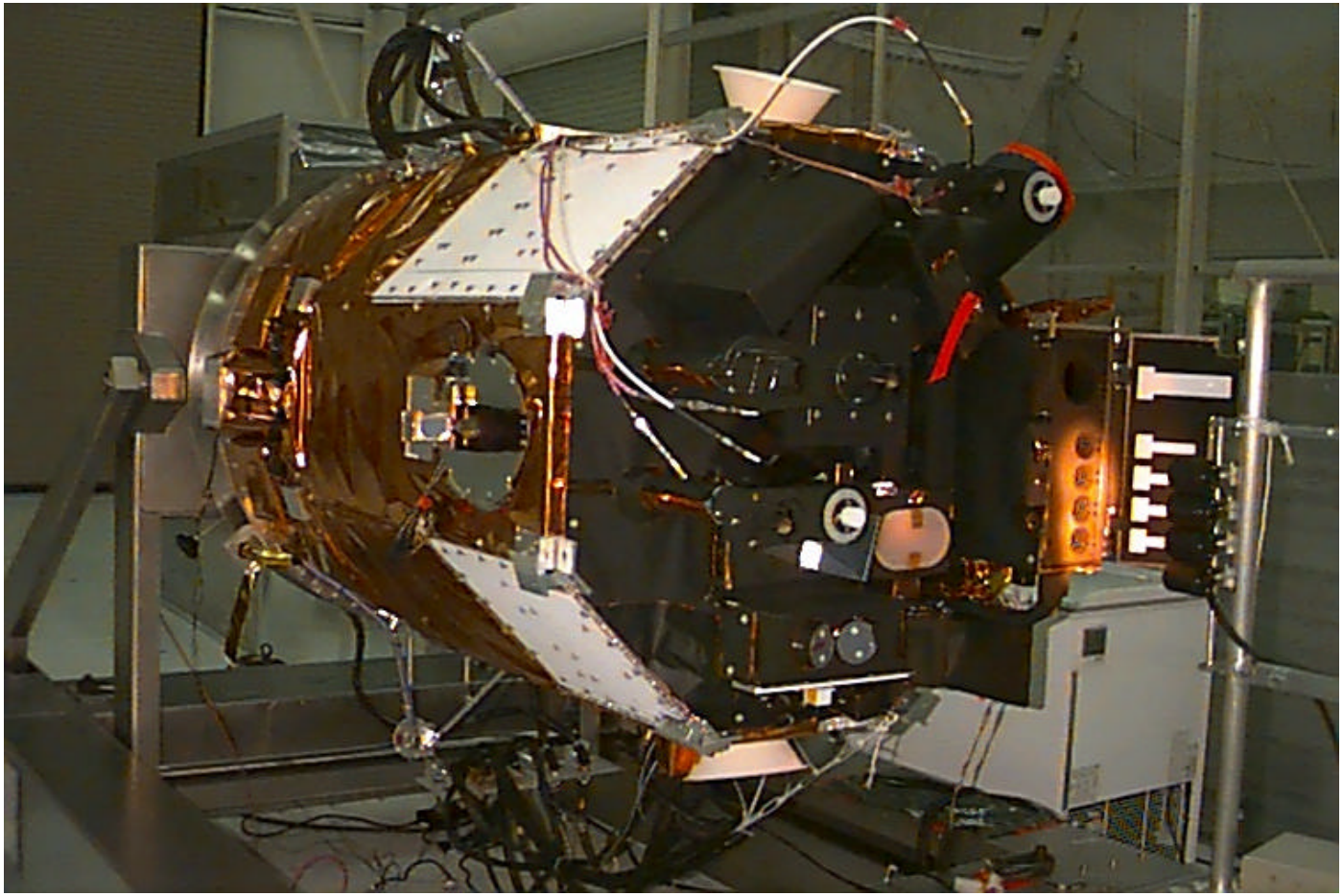
PCE-2 Platform Characteristics

Spacecraft Propulsion System

Up to 80 kg of hydrazine
16 thrusters in dual configuration providing torque in all three axis.

Attitude Control during maneuvers is performed by off modulation.

SAC-C at Vandenberg



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